Blues revival

Detailed ecological research three decades ago is now paying dividends for one British butterfly. **Nigel Williams** reports.

Thousands of one of Britain's most spectacular butterflies, which became extinct in the country in 1979, flew again this summer as a result of a careful research, reintroduction and conservation programme that provides a model for other flagship species.

The British Large Blue (*Maculinea arion*) occurs across Europe and northern Asia and is one of six large blue species globally, all of which are in serious decline. The beautiful butterfly was highly prized by Victorian collectors, but they were constantly frustrated by their inability to raise it in captivity. It was not until the early years of the last century that detailed observations unravelled the problem. Three leading lepidopterists discovered that, after feeding on wild thyme flowers for about three weeks, the small caterpillars crawled or fell to the ground. Here they awaited discovery by a red ant of the genus *Myrmica*, which began feeding on a sugary solution secreted from special glands on the caterpillar's back in response to the ant's attention. Movements by the caterpillar then prompted the ant to carry it underground into its nest. Here, the caterpillar began feeding on ant grubs. In the late spring of the following year the caterpillar pupated and after three weeks the butterfly emerged and crawled out of the ants' nest.

But these insights into the complexity of the lifestyle of these butterflies did not stop the steady decline of the species nationally. Concerned conservationists established nature reserves which they fenced off to prevent livestock damaging the thyme and installed wardens to deter collectors who were perceived as the main cause of local extinctions. But the butterfly continued to disappear.

By 1972 the butterfly had gone from most of its former sites and only two colonies in south-west England remained. Conservationists were now deeply concerned and decided to commission further work to see if there were more aspects of the biology of this species that had been overlooked. The then Nature Conservancy Council (now Natural England) and the Institute of Terrestrial Ecology (now the Centre for Ecology and Hydrology) appointed a young researcher, Jeremy Thomas, to further investigate the problem. But the timing was difficult, with his first field season turning out to be the last for the Cornish colony of Large Blues and at the other site in Devon only 250 adults emerged.

He began a detailed study of over 300 eggs and caterpillars and found that most did not survive their period in the ant nests. His key finding was that any species

Flying again: The Large Blue butterfly, which became extinct in Britain in 1979, is now flying again after reintroduction following study of its complex ecology. (Photo: Dave Simcox.)

of red ant would carry caterpillars into their nests but that adult butterflies only emerged from the nests of just one species, *Myrmica sabuteli*.

Thomas' work shifted to a study of the five different red ant species in the habitat, which revealed that each thrived under slightly different conditions. *M. sabuteli* needed warm conditions and highly grazed sward to prosper. Thomas then went back to look at former sites of the butterfly and found that those that hadn't been ploughed or planted with trees had long grass and so were unsuitable for *M. sabuteli.* So the key to the survival of the Large Blue appeared to be managing the habitat for the demands of a single species of red ant.

Unfortunately, this insight came too late and the last colony became extinct in 1979. But his work did help establish a key principle of conserving a species — the need to understand its detailed requirements, which in this case, appeared to be to ensure the right conditions for an entirely different species.

Impressed by Thomas' work, conservation bodies decided to manage this last site for the ant with a plan to reintroduce butterflies from Sweden when conditions were considered to be sufficient for their survival. The first caterpillars were re-introduced in 1983 and the butterfly has survived and bred at this site since. Emboldened, researchers have begun to look in detail at many other former sites and butterflies have since been re-introduced at several locations and more are in the offing. This summer's spectacular display is a vindication of these ongoing efforts and the research work carried out in the 1970s. And an added bonus is the realisation that management work to conserve one rare species appears to conserve many other species, some of which are also rare.

While the summer weather is crucial for the successful breeding of these butterflies and the last few years have been kind in Britain, the hope is that its re-establishment at some sites in the long-term is now secure.

A new bird in the hand …

…and more promised in the bush. That's the promise from a new survey of a remote region of the Andes. The survey amongst mountains in Columbia has revealed a new bird, one of the first to be revealed by DNA samples taken from the live bird which was then released unharmed. "This is the first time that a live type specimen has been used for the description of a new bird following the approval by the International Commission of Zoological Nomenclature of such techniques last year," the researchers write.

The bird has been named 'Yariguies Brush-Finch' with the official name *Atlapetes latinuchus yaringuierum*. It was described by a team of British and Colombian biologists from Fundacion ProAves including Thomas Donegan and Blanca Huertas, following the first biological exploration of the Yariguies mountains.

The new bird is named for the Yariguies indigenous people who formerly inhabited the mountain range where the bird was found.

The new bird is a large and colourful finch with black, yellow and red plumage. It differs from its closest relatives in having a black back and no white markings on its wings.

In order to survey the highest parts of the Yariguies mountains where the bird was found, the researchers and their equipment were dropped by helicopter onto an isolated peak at over 3,000 m high. This was the first human access at these altitudes in this 100 km long mountain range through Colombia.

Donegan said: "Before we began this study, no-one knew what species lived in the Yariguies mountains and whether they needed protecting. It is surprising that this new brush-finch and the forests of the Yariguies mountains could remain unstudied, undescribed and unprotected for so long."

Blanca Huertas, one of the team leaders currently working at the Natural History Museum in London, said: "The description of a new bird is a rare event in modern times. However this is just the first of several new species that we will be describing from the Yariguies mountains, including several new taxa of butterflies."

Brushed up: A new subspecies of brush-finch (*Atlapetes latinichus yaringuierum*) with distinctive plumage, has been discovered in the Yariguies mountains of Colombia. (Photo: Blanca Huertas/Proyecto YARE.)